
IND2625 MULTICRITERIA DECISION-MAKING IN OPERATIONS MANAGEMENT

TOTAL WORKLOAD: HOURS 45

CREDITS: 3 – CRITERIA: 12

PREREQUISITE(S): none

SYLLABUS

Concepts and Principles about Problems and Multicriteria Decision; Problem Modeling and Structuring; Preference Structure; Multicriteria Decision-Making (MCDM) Methods; Multicriteria Group Decision; Multicriteria decision under uncertainty; Problem-solving approaches and applications in R and Python programming language. Cases in operations management, sustainable supply chain and logistics, circular economy and Industry 4.0 (I4.0). Sensitivity analysis of parameters. The program incorporates theoretical concepts and practical exercises, offering a holistic understanding of MCDM with classical and current methods.

BIBLIOGRAPHY PRINCIPAL

CHAKRABORTY, S.; CHATTERJEE, P.; DAS, P. P. Multi-Criteria Decision-Making Methods in Manufacturing Environments: Models and Applications. CRC Press, 2023. ISBN 9781003377030

SHIH, H.-S.; OLSON, D. L. TOPSIS and its extensions: A distance-based MCDM approach. Springer Nature, 2022. ISBN 9783031095764

PAPATHANASIOU, J., & PLOSKAS, N. Multiple Criteria Decision Aid-Methods, Examples and Python Implementations, Cham, Switzerland: Springer Nature Switzerland AG, 2018. DOI: 10.1007/978-3-319-91648-4.

BIBLIOGRAPHY COMPLEMENTARY

ISHIZAKA, A.; NEMERY, P. Multi-criteria decision analysis: methods and software. John Wiley & Sons, 2013. ISBN: 978-1119974079

DE ALMEIDA, A. T. et al. Multicriteria and multiobjective models for risk, reliability and maintenance decision analysis. Cham, Switzerland: Springer International Publishing, 2015. ISBN: 978-3319179681

POMEROL, J.-C.; BARBA-ROMERO, S. Multicriterion decision in management: principles and practice. Springer Science & Business Media, 2000. ISBN: 978-0792377566.

PASMAN, H.J., ROGERS, W.J., BEHIE, S.W. Selecting a method/tool for risk-based decision making in complex situations. *Journal of Loss Prevention in the Process Industries*, 74, 104669, 2022. DOI: 10.1016/j.jlp.2021.104669.

YALCIN, A. S.; KILIC, H. S.; DELEN, D. The use of multi-criteria decision-making methods in business analytics: A comprehensive literature review. *Technological forecasting and social change*, v. 174, p. 121193, 2022. DOI: 10.1016/j.techfore.2021.121193